REMARKS/ARGUMENTS

In the Office Action issued January 12, 2004, claims 1-3, 5-11, 14, 16, 19-27, and 30-31 were rejected under 35 U.S.C. §102(e) as being anticipated by Yu et al., U.S. Patent Application Publication No. 2002/0147703 (Yu). Claims 1-31 were rejected under 35 U.S.C. §102(b) as being anticipated by an article by Hjaltason et al., entitled "Distance Browsing in Spatial Databases" (Hjaltason). Claim 10 was rejected under 35 U.S.C. §112, ¶2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 7, 11, 13, 30, and 31 were objected to due to informalities.

Claims 1-17 and 19-31 are now pending in this application. Claims 1, 7, 10, 11, 13, 30, and 31 have been amended. Claim 10 has been amended to more particularly point out and distinctly claim the subject matter which applicant regards as the invention and to correct dependency. Claims 7, 11, 13, 30, and 31 have been amended to correct the informalities.

The present invention is not anticipated by, nor obvious in view of, the references relied upon in the Office Action, as the prior art references do not disclose or suggest the claimed features of the present invention.

The Applicant respectfully submits that the present invention according to claims 1-3, 5-11, 14, 16, 19-27, and 30-31 is not anticipated by Yu. Yu discloses a transformation-based method for indexing high-dimensional data to support

similarity search. Yu partitions the data into clusters either based on some clustering strategies or simple data space partitioning strategies. The data in each cluster can be described based on their similarity with respect to a reference point, and hence they can be transformed into a single dimensional space based on such relative similarity. The data points are indexed using a B+-tree structure and a similarity search using range search strategy is performed. In particular, Yu discloses only operations on point data – "method maps high-dimensional points into single dimensional space" (see [0007]). In the present invention, both the objects in the data base and the query objects may be arbitrary non-point geometries in two-dimensional space. Thus, claim 1 recites conducting a search of a search area comprising interior and boundary tiles of the query geometry for neighbors among objects in the database, wherein the objects in the database are indexed using a linear quadtree index. This initial search step uses a search comprising both interior and boundary tiles of the query geometry. In Yu, only point query geometries are disclosed at the initial search step. The concepts of interior and boundary have no application to a point. Thus, this step is not disclosed by Yu because Yu cannot be disclosing a point having both an interior and boundaries – which would make no sense. Thus, Yu does not disclose or suggest an initial search step using a search area comprising interior and boundary tiles of the query geometry.

Thus, the present invention according to claim 1, and according to claims 2-3 and 5-6, which depend from claim 1, is not anticipated by Yu.

Likewise, claim 7 recites that the query object is a non-point object and that the objects in the database include a non-point object. Yu discloses only operations on point data. Thus, the present invention, according to claim 7, and claims 30 and 31, which are similar to claim 7, and according to claims 8-11, 14, 16, and 19-27, which depend from claim 7, is not anticipated by Yu.

The Applicant respectfully submits that the present invention according to claims 1-17, and 19-31 is not anticipated by Hjaltason. Hjaltason discloses techniques of browsing through a collection of spatial objects stored in an R-tree spatial data structure on the basis of their distances from an arbitrary spatial query object are compared. As disclosed by Hjaltason, a basic requirement for the method disclosed by Hjaltason to be applicable is that "the region covered by a node must be completely contained within the region(s) of the parent node(s)" (Section 4.1). By contrast, the present invention, for example, according to claim 1, requires that the objects in the database are indexed using a linear quadtree index. In a linear quadtree index, there is no parent-child hierarchy. Thus, Hjaltason explicitly excludes the use of or steps including a linear quadtree. In addition, in a linear quadtree, the data is linearly sorted and stored. Consequently, the query algorithm disclosed by Hjaltason is significantly different than and not applicable to the claimed method of the present invention. In particular, the algorithm disclosed by Hjaltason uses parent nodes and child nodes(as seen in Lines 2, 16-20 of Figure 3 or Lines 2, 15-19 of Figure 4), which do not exist in a linear quadtree required by the present invention. Besides, the present invention

does not use any priority queue as discussed by Hjaltason (Figures 3 and 4). Instead, it only uses the linear order (B-tree) of the tile codes of the objects for searching and pruning.

Thus, the present invention according to claim 1, and according to claims 7, 30, and 31, which are similar to claim 1, and according to claims 2-6, 8-17, and 19-29, which depend therefrom, is not anticipated by Hjaltason.

In view of the above, it is respectfully submitted that the present invention is allowable over the references relied upon in the Office Action. Accordingly, favorable reconsideration of this case and early issuance of the Notice of Allowance are respectfully requested.
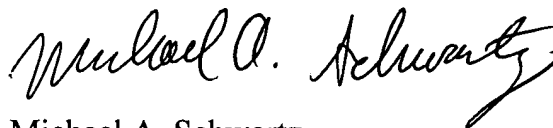
Additional Fees:

The Commissioner is hereby authorized to charge any insufficient fees or credit any overpayment associated with this application to Deposit Account No. 19-5127 (19111.0035).

Conclusion

In view of the foregoing, all of the Examiner's rejections to the claims are believed to be overcome. The Applicants respectfully request reconsideration and issuance of a Notice of Allowance for all the claims remaining in the application. Should the Examiner feel further communication would facilitate prosecution, he is urged to call the undersigned at the phone number provided below.

Respectfully Submitted,

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